

# **Butte Creek Spring–run Chinook Salmon Life History Investigation**

**Paul D Ward**

## **Public Comments**

No public comments were received for this proposal.

# Technical Synthesis Panel Review

## Proposal Title

#0100: Butte Creek Spring–run Chinook Salmon Life History Investigation

Final Panel Rating
adequate

## Technical Synthesis Panel (Primary) Review

### TSP Primary Reviewer's Evaluation Summary And Rating:

The proposed work will continue the Butte Creek springrun Chinook salmon (SRCS) life history investigation for an additional three years. Butte Creek contains the largest of several CV tributary native salmon populations. More than \$33M has been spent since 1993 to restore this fishery, including 5 juvenile fish screens, 11 fish ladders, removal of 4 diversion dams, acquisition of 40 cfs dedicated for instream flow, and installation/operation of 10 flow monitoring stations. The work will continue development and evaluation of an SRCS adult escapement estimate that serves as a "recovery metric" providing a measure of overall restoration effectiveness and as a measure of recovery for the listed SRCS. The work includes continued juvenile SRCS monitoring and coded wire tagging of up to 400,000 juvenile SRCS each year for 2006 and 2007 and a new estimate for fallrun Chinook salmon (FRCS) to assess impacts of straying. To support evaluation of efficacy/precision of current SRCS snorkel surveys, the work will develop estimates of SRCS prespawn mortalities and SRCS spawning, using a standard population assessment method and model. The project is integrated into three recovery management efforts. Discussion of the need and appropriateness of the monitoring and its methods is modest, a likely reflection of the on-going status of the program but a weakness of the proposal nonetheless. Our review found a

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number of flaws in the sampling program and proposal. Carcass counts are an unreliable measure of the effectiveness of restoration activities. Adult escapement numbers can change dramatically over time independently of restoration activities, either due to naturally occurring stream changes, or ocean climate conditions favoring juvenile survival or ocean harvest. A BETTER MEASURE OF RESTORATION ACTIVITIES WOULD BE GROWTH AND SURVIVAL OF JUVENILES IN DIFFERENT HABITATS. TO RELATE RESTORATION ACTIVITIES TO ESCAPEMENT, OR COMPARE ESTIMATION METHODS, IT IS NECESSARY TO HAVE ESTIMATES OF VARIANCE. There was no discussion in the proposal, or data presented, to estimate variance around annual escapement numbers. Variance estimates were not presented for the snorkeling method or the carcass count method. Specific details were lacking from the proposal to better evaluate the monitoring methods. No information was presented on how carcasses are observed. Accurate counts will vary depending upon water clarity and depth. Trap efficiency for fry sampling was not reported. A potential problem lies in tagging of small fry (

### Additional Comments:

The proposed work will continue the Butte Creek springrun Chinook salmon (SRCS) life history investigation for an additional three years. Butte Creek contains the largest of several CV tributary native salmon populations. More than \$33M has been spent since 1993 to restore this fishery, including 5 juvenile fish screens, 11 fish ladders, removal of 4 diversion dams, acquisition of 40 cfs dedicated for instream flow, and installation/operation of 10 flow monitoring stations. The work will continue development and evaluation of an SRCS adult escapement estimate that serves as a "recovery metric" providing a measure of overall restoration effectiveness and as a measure of recovery for the listed SRCS. The work includes continued juvenile SRCS monitoring and codedwire tagging of up to 400,000 juvenile SRCS each year for 2006 and 2007 and a new estimate for fallrun Chinook salmon (FRCS) to assess impacts of straying. To support evaluation of efficacy/precision of current SRCS snorkel surveys, the work

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## Technical Synthesis Panel (Discussion) Review

### TSP Observations, Findings And Recommendations:

The proposal seeks to continue funding for escapement monitoring of Spring-run Chinook salmon to Butte Creek. External reviewers were critical of adult escapement as a measure of population response to stream restoration. Their concern, which was shared by the panel, is that there are too many factors contributing to adult survival (e.g. ocean conditions, migration through the "delta") to allow the applicants to detect a restoration "signal" through the "noise" of the rest of the life-cycle. There were some

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interesting components of this project (e.g. marking juveniles to assess later growth and survival). However, there is no discussion in the proposal or evidence in data presented that shows the applicants plan to estimate variance in the observation, which is essential for demonstrating cause and effect. The panel recommended that the applicants consult a statistician for guidance on a superior monitoring plan. The main justification for continuing this program is to maintain an ongoing plan.

Rating: Adequate